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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,910	08/21/2003	Shinichi Ishimoto	009683-478	6455
21839	7590	09/08/2005	EXAMINER	
BUCHANAN INGERSOLL PC (INCLUDING BURNS, DOANE, SWECKER & MATHIS) POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			HO, HOAI V	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">10/644,910</p>	<p>Applicant(s)</p> <p align="center">ISHIMOTO, SHINICHI</p>	
	<p>Examiner</p> <p align="center">Hoai V. Ho</p>	<p>Art Unit</p> <p align="center">2827</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)</p> <p>Paper No(s)/Mail Date <u>5/25/05</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)</p> <p>Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|---|---|

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1. This office acknowledges receipt of the following items from the Applicant:

Information Disclosure Statement (IDS) was considered.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **August 4, 2005** has been entered.

2. Claims 2-13 are presented for examination.

***Claim Rejections - 35 USC 112.***

3. Claims 6-8 and 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, line 3, "each sector" is unclear and confusing. How does it relate to an "each sector" in line 5 of claim 2?

Similarly, claim 7, line 3, "each sector" is unclear and confusing. How does it relate to an "each sector" in line 5 of claim 2?

Claim 10, line 2, "each sector" is unclear and confusing. How does it relate to an "each sector" in line 5 of claim 4?

Similarly, claim 11, line 2, "each sector" is unclear and confusing. How does it relate to an "each sector" in line 5 of claim 4?

Claims 8, 9, 12 and 13 are rejected due to the rejections of its parent claims.

***Claim Rejections - 35 USC 102***

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 2-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Atsumi et al. U. S. Patent (USP) No. 6160738.

Per claims 2 and 4, Figure 7 of Atsumi is directed to a semiconductor storage device comprising: a nonvolatile memory (1) to which data is written in a sector unit (EB1-EB1024 in fig. 8A); and a data rewriting unit (4 and 5, col. 7, lines 11-15 and col. 8, lines 20-45) rewriting data in the nonvolatile memory (col. 8, lines 30-32), wherein each sector (EB1 or RB1 of fig. 8A) in said nonvolatile memory includes: a data area into which data is stored (EB1); and a refresh mark (FC1-FC1024 of fig. 8B) into which information indicative of whether refresh has been performed or not is stored, and said data rewriting unit includes a refresh execution unit (2) referring to said refresh mark and determining whether the sector is refreshed or not, thereby executing the refresh, wherein said data rewriting unit further includes a refresh zone detection unit (fig. 8A) dividing a block of said nonvolatile memory into refresh zone units (RB1-RB1024, col. 7, lines 27-28 and lines 38-46) for executing refresh; and detecting the refresh zone including a sector of a writing target, and said refresh execution unit refreshes the sector included in the refresh zone detected by said refresh zone detection unit every time data is written to a sector (col. 4, lines 46-52 and fig. 5).

Per claims 3 and 5, Atsumi discloses wherein every time data is written to a sector (fig. 5), said refresh execution unit sequentially refreshes the sectors (fig. 9) included in the refresh

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zone detected by said refresh zone detection unit, starting at a head sector or a final sector, and sets a first value (0 in block 208 of fig. 9) in the refresh mark included in the sector, and after completion of the refreshes for all the sectors included in said refresh zone, every time data is written to a sector, said refresh execution unit sequentially refreshes the sectors included in the refresh zone detected by said refresh zone detection unit, starting at the head sector or the final sector, and sets a second value (1 block 209 of fig. 9) different from the first value in the refresh mark included in the sector.

***Claim Rejections - 35 USC 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable Atsumi et al. USP No. 6160738 in view of So et al USP 6151246.

Per claims 6 and 10, Atsumi discloses all the subject matter claimed except for wherein each sector in said nonvolatile memory further includes a data error detection/correction code, and when refreshing the sector, said refresh execution unit writes data corrected by using said data error detection/correction code to the sector. However, block 655 and 620 of Figure 6 of So discloses wherein each sector in said nonvolatile memory further includes a data error detection/correction code, and when refreshing the sector, said refresh execution unit writes data

corrected by using said data error detection/correction code to the sector (col. 8, line 48 to col. 9, line 5). It would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Atsumi's circuit which utilizes the data error detection/correction code as taught by So because So suggests that the corrected threshold voltage can be written to the original memory cell containing the error when the data error detection/correction code detects in threshold voltages of memory cells (col. 3, line 63 to col. 4, line 4).

As per claims 7-9 and 11-13, Atsumi discloses all the subject matter claimed except for wherein each sector in said nonvolatile memory further includes a non-defective sector code indicating whether the sector is defective or not, and when refreshing the sector, said refresh execution unit suspends the refresh in the case where the sector has been found to be a defective sector by referring to said non-defective sector code.

However, So, starting at column 9, line 48 to column 10, line 5, discloses wherein each sector in said nonvolatile memory further includes a non-defective sector code (erase counts) indicating whether the sector is defective or not (invalid or valid), and when refreshing the sector, said refresh execution unit suspends the refresh in the case where the sector has been found to be a defective sector by referring to said non-defective sector code. It would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Atsumi's circuit which utilizes the non-defective sector code indicating whether the sector is defective or not and for suspending the refresh when the sector is defective as taught by So because So suggests that the sector can be declared invalid or defective during a refresh operation when the erase count exceeds a limit predetermined then the refresh operation uses a spare sector in place of the invalid sector (col. 9, line 62 to col. 10, line 4).

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8. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.


9. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V. Ho whose telephone number is (571) 272-1777. The examiner can normally be reached on 7:00 AM -- 5:30 PM.

The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
hvh  
September 1, 2005

  
Hoai V. Ho  
Primary Examiner  
Art Unit 2818